

REMARKS

This is in full and timely response the non-final Office Action mailed on July 11, 2007.

Claims 31-42 are currently pending in this application, with claim 31 being independent.

No new matter has been added.

Reexamination in light of the following remarks is respectfully requested.

Extensions of time

Please treat any concurrent or future reply, requiring a petition for an extension of time under 37 C.F.R. §1.136, as incorporating a petition for extension of time for the appropriate length of time.

Response to amendment

Claims 25-26 have been canceled without prejudice or disclaimer of their underlying subject matter.

New non-final Office Action

At least for the following reasons, if the allowance of the claims is not forthcoming at the very least and a new ground of rejection made against any of these claims, then a *new non-final Office Action* is respectfully requested.

Prematureness

Applicant, seeking review of the *prematureness* of the final rejection within the Final Office Action, respectfully requests reconsideration of the finality of the Final Office Action for the reasons set forth hereinbelow. See M.P.E.P. §706.07(c).

New grounds of rejection

Paragraph 2 of the non-final Office Action of January 12, 2007 indicates a rejection of claims 21-30 under 35 U.S.C. §102 as allegedly being anticipated by U.S. Patent Application No. 2001/0055733 to Irie et al. (Irie).

Within the Amendment in Response to Non-Final Office Action filed on April 3, 2007, claims 25 and 26 have been placed into independent form. No other amendment to either claim 25 or claim 26 is found within the Amendment in Response to Non-Final Office Action.

Nevertheless, paragraph 5 of the Final Office Action of July 11, 2007 include a rejection of claim 9 using U.S. Patent No. 6,593,037 to Gabriel et al. (Gabriel).

Paragraph 7 of the Final Office Action admits that the rejection found within paragraph 5 is new grounds of rejection.

Thus, the new rejection of claims 25 and 26 made within the Final Office Action is a new ground of rejection that is neither necessitated by applicant's amendment of claim 25 or 26 nor based on information submitted in an information disclosure statement.

Accordingly, the finality of the rejection of either claims 25 and 26 made within the Final Office Action is premature at least for this reason.

A new non-final Office Action is respectfully requested.

Petition

A Petition Under 37 C.F.R. §1.181 to Request Withdrawal of the Final Office Action has been previously filed. Timely consideration of this Petition is respectfully requested.

Rejections under 35 U.S.C. §102 and 35 U.S.C. §103

Paragraph 5 of the Office Action indicates a rejection of claims 25-26 under 35 U.S.C. §102 as allegedly being anticipated by U.S. Patent Application No. 2001/0055733 to Irie et al. (Irie) in view of U.S. Patent No. U.S. Patent No. 6,593,037 to Gabriel et al. (Gabriel).

This rejection is traversed at least for the following reasons.

While not conceding the propriety of this rejection and order to advance the prosecution of the above-identified application, claims 25-26 have been canceled without prejudice or disclaimer of their underlying subject matter.

Withdrawal of this rejection is respectfully requested.

Paragraph 3 of the Office Action indicates a rejection of claims 31-38, 41-42 under 35 U.S.C. §102 as allegedly being anticipated by Irie.

Paragraph 6 of the Office Action indicates a rejection of claims 39-40 under 35 U.S.C. §103 as allegedly being unpatentable over Irie in view of Gabriel.

This rejection is traversed at least for the following reasons.

Claims 31-42 - Claims 32-42 are dependent upon claim 31. Claim 31 is drawn to a mask fabrication method comprising the steps of:

acquiring input data, said graphic input data corresponding to an LSI pattern to be formed on a wafer;

dividing said graphic input data into V-line data and H-line data, said V-line data being said input data extending onto said wafer in a first direction and said H-line data being said input data extending onto said wafer in a direction other than said first direction;

forming a V-line reflective mask adapted to reflect a light onto said wafer, a mask pattern for said V-line reflective mask consisting only of V-line pattern forming elements; and

forming an H-line reflective mask adapted to reflect said light onto said wafer, a mask pattern for said H-line reflective mask consisting only of H-line pattern forming elements,

wherein said light is projected along a projection vector in a projection direction,

wherein said first direction is alignable in said projection direction, and

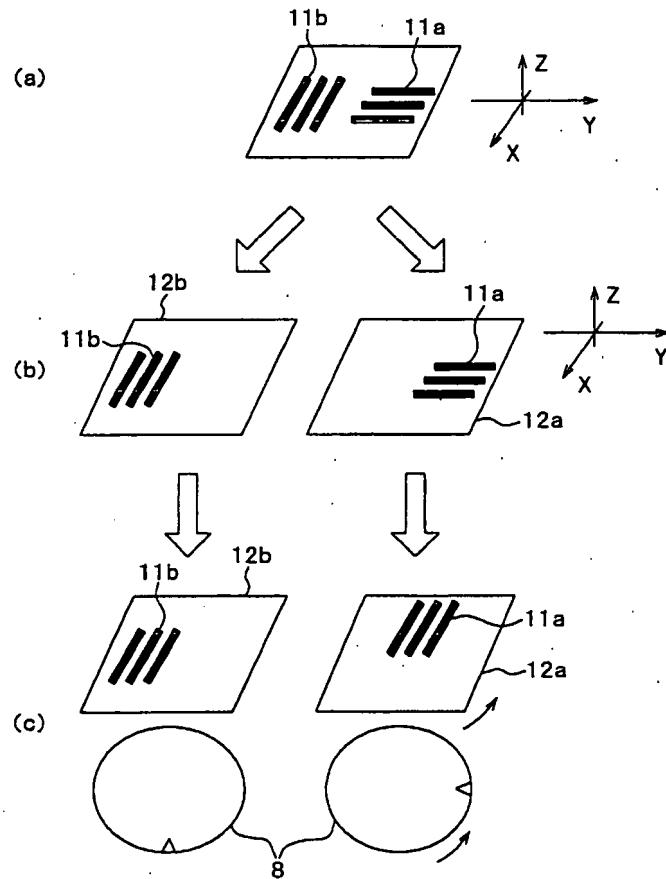
wherein said direction other than said first direction is alignable in said projection direction.

The following description is provided for illustrative purposes and is not intended to limit the scope of the invention. Paragraph [0029] of the specification as originally filed provides that:

Particularly, if, as explained in the above-mentioned embodiment, the exposure process is carried out twice by using the V-line mask 12a and the H-line mask 12b in this order, and the extending directions of the pattern forming elements 11a and 11b are aligned in the direction of the projection vector of the EUV ray, it becomes very effective in the case of improving the resolution of the projected image on the wafer 8 even when the EUV ray is incoming askew.

Figure 1 of the specification is provided hereinbelow.

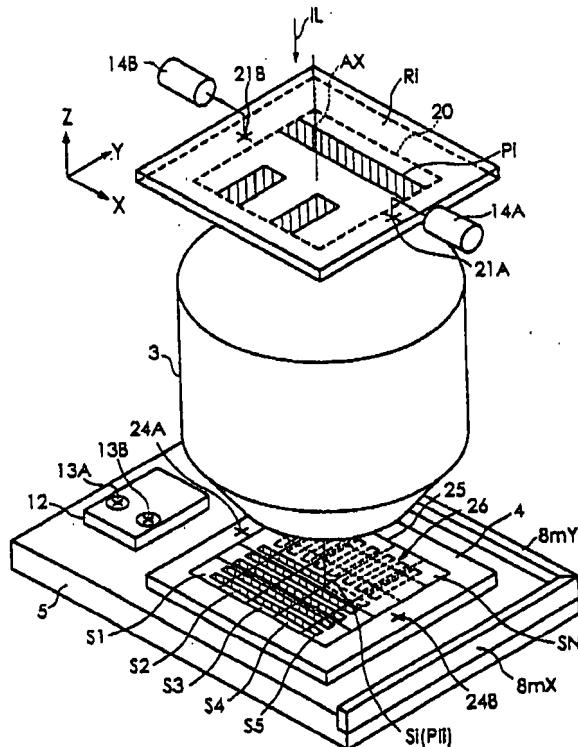
FIG. 1



Irie - Irie arguably teaches an exposure method and exposure apparatus. Irie arguably teaches the presence of a master pattern 27 of the working reticle 34 (Irie at Figure 6, paragraph [0110]). Irie arguably teaches the presence of a parent pattern 36 (Irie at Figure 6, paragraph [0112]).

Irie arguably teaches the presence of illumination light IL and alignment marks 21A and 21B (Irie at Figure 4).

FIG. 4



The Final Office Action concedes that Irie fails to disclose, teach, or suggest the reflection type mask as having an absorption film formed thereon (Final Office Action at page 8).

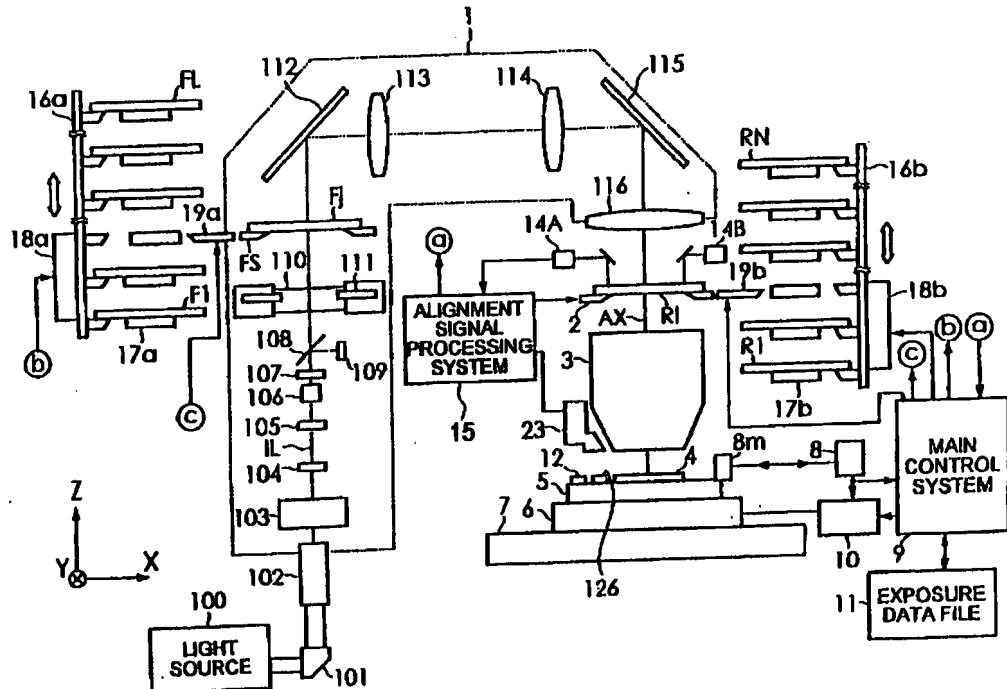
Nevertheless, Irie arguably teaches that in an exposure apparatus using EUV rays, however, a reflection type mask is used, while in a proximity type X ray exposure apparatus or electron beam exposure apparatus etc., a transmission type mask (stencil mask, membrane mask) is used, so a silicon wafer etc. is used as the master of the mask (Irie at paragraph [0161]).

However, Irie fails to disclose, teach, or suggest that the illumination light IL light is projected along a projection vector in a projection direction, that the first direction is alignable in the projection direction, and that the direction other than the first direction is alignable in the projection direction.

The Final Office Action asserts the presence of X-direction elements, i.e., H-line mask rotated about 90 degrees to align (said direction alignable in the projection direction) in the projection beam (Final Office Action at page 5).

In response, Figure 1 of Irie is provided hereinbelow.

FIG. 1



The filters F_j may be provided in a one-to-one correspondence with the reticles R_i , but use of the same density filter F_j for exposure of several reticles R_i enables the number of the density filters F_j to be reduced and is more efficient (Irie at Figure 1, paragraph [0080]).

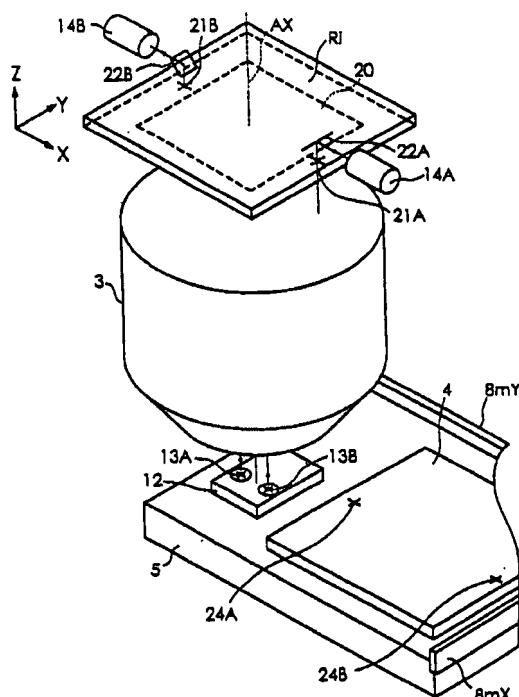
Further, the exposure light IL emitted from the illumination optical system 1 illuminates part of a master reticle R_i held on the reticle stage 2 (Irie at Figure 1, paragraph [0084]). The reticle stage 2 holds the i-th ($i=1$ to N) master reticle R_i (Irie at Figure 1, paragraph [0084]).

In this regard, Irie teaches the density filter Fj as something other than the master reticle Ri.

Irie arguably teaches that if the density filters Fj are made able to be used rotated 90 degrees or 180 degrees, by preparing for example the three types of density filters Fj of Figure 3A, Figure 3B, and Figure 3E, it is possible to realize the functions of the other density filters and the efficiency is greater (Irie at Figure 1, paragraph [0080]).

Figure 7 of Irie is provided hereinbelow.

FIG. 7



When aligning a master reticle Ri, the substrate stage 6 of Figure 1 is driven to position the fiducial marks 13A and 13B so that the center point between the fiducial marks 13A and 13B on the fiducial mark member 12 substantially registers with the optical axis AX of the projection optical system 3 as shown in Figure 7 (Irie at paragraph [0119]).

Yet, no rotation of the sample table 5 is described within Irie.

Moreover, no rotation of the master reticle Ri is described within Irie.

- *Thus, Irie fails to disclose, teach or suggest a method:*

wherein said light is projected along a projection vector in a projection direction,

wherein said first direction is alignable in said projection direction, and

wherein said direction other than said first direction is alignable in said projection direction.

Gabriel - Gabriel arguably teaches an EUV mask or reticle having an absorptive mask 18, 108, 208, 308 (Gabriel at Figures). For example, Figure 4 of Gabriel is provided hereinbelow.

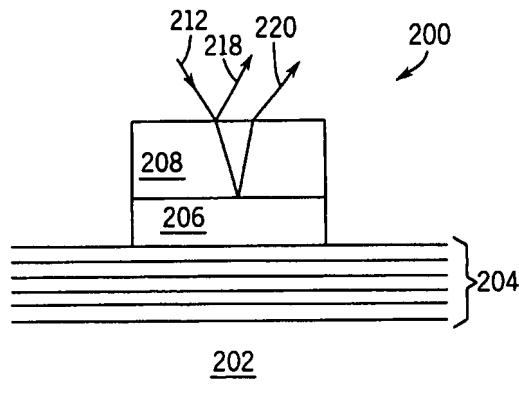


FIG. 4

- *However, Gabriel fails to disclose, teach or suggest a method:*

wherein said light is projected along a projection vector in a projection direction,

wherein said first direction is alignable in said projection direction, and

wherein said direction other than said first direction is alignable in said projection direction.

Withdrawal of this rejection and allowance of the claims is respectfully requested.

Conclusion

For the foregoing reasons, all the claims now pending in the present application are allowable, and the present application is in condition for allowance.

Accordingly, favorable reexamination and reconsideration of the application in light of the remarks is courteously solicited.

Fees

If any fee is required or any overpayment made, the Commissioner is hereby authorized to charge the fee or credit the overpayment to Deposit Account # 18-0013.

If the Examiner has any comments or suggestions that could place this application in even better form, the Examiner is requested to telephone Brian K. Dutton, Reg. No. 47,255, at 202-955-8753.

Dated: August 9, 2007

Respectfully submitted,
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